TABLE OF CONTENTS

ANNEX I SCENARIO DEVELOPMENT

As required by OPA-90, a most probable discharge, a maximum most probable discharge, and a worst case discharge are presented. An additional scenario for the North Coast Area, a "Discharge of Maximum Impact", is also included. The two following scenarios take place in two separate regions of the California coastline. The first takes place along the Northcoast area within the MSO San Francisco AOR. The Second is along the Southern California shoreline within the southern sector of the MSO LA/LB AOR.

APPENDIX I MOST PROBABLE DISCHARGE (NORTH COAST AREA)

The Coast Guard has determined that 0-50 barrels is a reasonable volume for planning the most probable discharge because it is based on national operational spill data and evaluation of historical trends in smaller size spills. This value is adopted for consistency with Federal and State Vessel and Facility Contingency Plans.

HISTORICAL SPILL CONSIDERATIONS

Appendix III of North Coast Area Annex E contains the local historical spill data and analysis. The local historical average spill size of 77 gallons (1.8 barrels) is at the lower end of the 0-50 barrel national average range. A spill of this size is considered a "routine" spill size and insufficient for planning purposes. Therefore, this plan has adopted a larger value (approximately 25 barrels) within the 0-50 barrel range.

The most probable reason for a spill of this magnitude is due to an automatic bilge pump discharging dirty bilge water or from the loss of diesel fuel from a sinking fishing vessel.

Other common causes of these 0-50 barrel most probable spills include human error, mechanical failure, or tank or pipe rupture.

HAZARD AND RISK ASSESSMENTS

A spill of this magnitude could occur in Humboldt Bay, Crescent City Harbor, Fort Bragg, Cape Mendocino, or anywhere along the Northern Coast of California. Fishing and recreational vessel traffic, marinas and some industrial areas are located in these areas. Humboldt Bay has four marine oil transfer facilities and is considered to be the area of greatest hazard due to the relative size of the port, volume of traffic and potential navigational hazards (see Annex E, Appendix III for further information). Although Humboldt Bay is considered the area of greatest potential hazard, Crescent City Harbor was chosen as the site for this scenario to consider other areas at risk. Seasonal considerations for Environmentally Sensitive Areas are addressed in Appendix V to Annex E. Weather is the primary seasonal consideration with the winter months experiencing numerous storms with heavy rains and winds. Summer months typically have a weather pattern of heavy morning and late afternoon fog which could affect response times and operations.

VULNERABILTY ANALYSIS

Proximity of these hazards to the most sensitive areas, i.e. environmentally sensitive areas is of primary concern. See Annex E for specific information on environmentally sensitive areas.

DESCRIPTION OF THE EVENT

MOST PROBABLE DISCHARGE (NORTH COAST AREA)

Situation: A small diesel powered fishing vessel sinks at the dock in Crescent City Harbor. It is loaded with 800

gallons of fuel, 20 gallons of lube oil.

Location: Crescent City Harbor

Amount: The boat is sunk with 800 gallons of fuel and 20 gallons of lube oil on board. The fuel is leaking out through tank vents and loose fill caps. All of the lube oil has come out of the open lube oil container.

Securing Source: Since the vessel is sunk, the source can only be secured by divers or by raising the vessel.

Areas at Risk: The sensitive environment within the Crescent City Harbor.

Time of Year: Coincident with sensitive season for several species of wildlife.

Weather: Nightime with fog.
Wind: 30 kts.SW to W
Visibility: 1/2 mi.
Seas: 1-2 ft.
Current: Max Flood

INITIAL ACTIONS

The initial actions and response strategies described for each scenario were developed as the final step in this planning cycle and are considered to be the key events likely to occur. Many variables arise in an actual event and not all options were considered for this planning cycle. During future planning cycles, these scenarios will be played out in table top and field exercises. This Annex will be revised and expanded in detail based on the results of the exercises.

NOTIFICATION

Notification will proceed in accordance with TAB A to Appendix II to Annex J. Key notifications will be to the NRC, State OES, and Group Humboldt Bay. Attempts will be made to notify other vessel owners in the area, if their vessels are at risk.

ACTIVATION OF RESPONSE

The major questions to be answered are: Has the source been secured?; How much time remains to effectively boom the vessel?; Is an RP readily identifiable?; and, Is cleanup feasible? To answer these questions, it is important to establish effective communications with the first available person on scene. This person is likely be the local harbor/ marina master, citizen or fisherman, an OSPR warden or a Coast Guardsman. Marine Safety Office, San Francico Bay, once notified begins immediate assessment of the situation.

The primary concerns, after ensuring safety of life, is to stop the source and to contain the spilled fuel. If there is an RP, MSO San Francisco Bay, Port Operations Department, will discuss the response options with him/her. It is not likely that the RP will have containment boom, therefore, the two most rapid means of boom deployment would be from the CGC EDISTO (less than 2 hours for boom to be fully deployed) or, if the CGC EDISTO is underway, from either the RP or CG (non-BOA) contracting Pacific Affiliates in Eureka (2-4 hours until boom is fully deployed). In any event, it is likely that the spill would require opening the OSLTF. If fuel remains onboard, the RP contracts a local diver to plug the fuel vents and remove the remaining fuel and lube oil from the vessel. The major contirbution hampering the response effort is the fact that the spill has occurred during the night making the diesel very difficult to see. This possibly reduces the effectiveness of the booming efforts.

INVESTIGATION

The initial investigation is conducted by Group Humboldt Bay reserve pollution investigators, for the Coast Guard, and by the local OSPR warden for the State. Subsequently, MSO San Francisc dispatches personnel to the scene to continue the investigation and to monitor the cleanup operations.

RESPONSE ORGANIZATION

The response organization used is the organization for routine operations for the Coast Guard, State, Local, and RP. Establishment of the Unified Command is not necessary.

CONTAINMENT, COUNTERMEASURES, AND CLEANUP STRATEGIES

Contaiment is accomplished by deploying boom around the sunken vessel or area encompassing the spill. Cleanup is most likely accomplished through the use of sorbents. Due to the type and quantity of oil and the location, the decisions is concurrently made that dispersants or in-situ burning will not be employed. Protection at Elk Creek and the entrance to Crescent City Harbor are paramount. A modification of the protective booming strategies detailed in Appendix V of North Coast Area Annex E are deployed in the event that these two environmentally sensitive sites are at risk.

RESOURCES REQUIRED AND SHORTFALLS

If the vessel is 40-50 ft in length, it is expected that approximately 150 ft of boom would be required for containment. Additional boom is required if protection of environmentally sensitive sites is necessary. If the CGC EDISTO is underway, the response time for fully deploying equipment is increased due to the distance from Eureka to Crescent City. If equipment were pre-staged in Crescent City, this response time could potentially be avoided. If protective booming is necessary for the environmentally sensitive sites, there would be a shortfall in the additional boom required. Depending on the extent of booming necessary, there will likely be a shortfall of boats to deploy the boom used for protection.

ESTIMATED TIME TO CLEANUP THE SPILL

The entire cleanup is expected to take 1-2 days. The spill site is considered “clean” when all the fuel is removed from the vessel and all visible product is removed from the water (no sheen).

Crescent City, California Plan
Oil Spill Trajectory Notes

MOST PROBABLE DISCHARGE

Model Limitations and Caveats

For this Area Plan oil spill scenario, only user-specified winds were used.

For offshore areas, current patterns are based on average seasonal conditions. Current perturbations from wind events, shelf waves, and eddy events are not predictable and therefore not included in the model. Similarly, local small scale phenomena, such as eddies off spits or in rivers and local convergences or divergences are not modeled.

The model does not account for oil that picks up sediment and sinks. This can occur in high sediment rivers and along high energy sand beaches.

Additional Notes

A small fishing boat sinks while tied to the pier in Crescent City Harbor, California. 1400 gallons of diesel fuel (API 39.4) and 20 gallons of lube oil are quickly released into the water. The boat is tied to the long pier on the west side of the harbor, next to the west breakwater. Winds are from the southwest at 30 knots and the tide is flooding.

A spill of 1400 gallons of diesel fuel, under persistent 30 knot southwest winds and a flood tide, would probably result in a slick extending about a half mile from the spill. Further away from the spill's source the slick would begin breaking up and reach the beaches, which are about a mile away, as patches and streamers of oil The spill would probably impact the east and northeast shores of Crescent City Harbor. The oil would probably reach these shorelines about one hour after the spill.

Because it is difficult to predict the height of waves in Crescent City Harbor under 30 knots of wind, three different runs from a program that estimates oil weathering (ADIOS version 1.0.1) are attached. The outputs give estimates of the amount of diesel fuel that will remain with waves of one foot, two feet and three feet.

The small amount of lube oil spilled, 20 gallons, should have a relatively slight effect. After being broken up by the wind and seas, the lube oil may form some scattered tarballs. The tarballs from lube oil can persist for several weeks; however, with the small amount of lube oil spilled the tarballs would probably be widely scattered and quite small within a short time.

Oil Budget Table

Adios 1.0.1

Oil Name: DIESEL
API: 39.4
Wind Speed: Constant at 30 kn
Water Temperature: 65 F
Instantaneous release of 1400 gal
*Insufficient distillation & emulsification data, answers may be inaccurate.

Pour Point: -4.0 F
Emul. Const.:No emulsification expected

Time hours	Total Released gallons	Evaporated percent	Dispersed percent	Floating percent
0	1,400	0	0	100
3	1,400	52	7	41
6	1,400	59	13	28
9	1,400	62	18	20
12	1,400	64	21	15
15	1,400	65	23	12
18	1,400	66	25	9

Oil Name: DIESEL
API: 39.4
Wind Speed: Constant at 30 kn
Water Temperature: 65 F
Instantaneous release of 1400 gal
*Insufficient distillation & emulsification data, answers may be inaccurate.

Pour Point: -4.0 F
Emul. Const.:No emulsification expected

Time hours	Total Released gallons	Evaporated percent	Dispersed percent	Floating percent
0	1,400	0	0	100
1	1,400	35	3	62
2	1,400	46	10	44
3	1,400	51	16	33
4	1,400	53	20	27
5	1,400	55	24	21
6	1,400	56	26	18
7	1,400	57	29	14
8	1,400	57	30	13
9	1,400	58	32	10

Oil Name: DIESEL
API: 39.4
Wind Speed: Constant at 30 kn
Water Temperature: 65 F
Instantaneous release of 1400 gal
*Insufficient distillation & emulsification data, answers may be inaccurate.

Pour Point: -4.0 F
Emul. Const.:No emulsification expected

Time hours	Total Released gallons	Evaporated percent	Dispersed percent	Floating percent
0	1,400	0	0	100
1	1,400	35	6	59
2	1,400	45	15	40
3	1,400	49	23	28
4	1,400	52	29	19
5	1,400	53	33	14
6	1,400	53	36	11

APPENDIX II MAXIMUM MOST PROBABLE DISCHARGE (NORTH COAST AREA)

The maximum most probable discharge takes into account such factors as the size of the largest recorded spill, traffic flow through the area, hazard assessment, risk assessment, seasonal considerations, spill histories, and operating records of facilities and vessels in the area.

HISTORICAL SPILL CONSIDERATIONS

Appendix III of North Coast Area Annex E contains the local historical spill data and analysis. Spill history indicates a maximum most probable spill of approximately 3000 gallons (71 barrels). While this value is greater than the value adopted for the most probable spill discussed in the preceding pages, it is considered insufficient for planning purposes. A higher value (2,500 barrels) within the national average of 50-2,500 barrels has therefore been adopted for planning considerations.

There are very few potential sources for a discharge of this size within the North Coast. However, the possibility of such a spill cannot be disregarded. Possible causes include a tank or pipeline rupture at one of the three North Coast marine oil transfer facilities, a catastrophic error during transfer operations between a facility and a tank barge or tank vessel, and the holing of a loaded tank barge or tank vessel.

HAZARD AND RISK ASSESSMENT

As mentioned above, a discharge of this magnitude would likely involve a marine oil transfer facility, tank barge or tank vessel. Humboldt Bay is the only port within the North Coast that contains marine oil transfer facilities. It is also the only port in the area that receives tank vessels or tank barges. As such, it is considered the area of greatest risk.

The expanse of waters offshore is another possible location for a 2,500 barrel spill of diesel. Tank vessels and tugs with tank barges frequently transit the coast going to and from Alaska, San Francisco, Los Angeles and other West Coast ports. Although many tank vessels have voluntarily agreed to transit fifty or more nautical miles offshore, many transit within fifty nautical miles. Furthermore, coastwise tug and tank barge traffic almost exclusively transits within fifty nautical miles, as the short voyages relative to those of tankers make such measures unrealistic and tremendously cost prohibitive.

Several navigational hazards exist in these waters. The coastline is characterized by numerous rocky headlands, wave-cut platforms, submerged rocks, and sea stacks. Inclement weather conditions are also inherent to the entire North Coast. Storms with heavy rains and high winds occur throughout the year, though primarily during winter months. Summer months typically have heavy morning and late afternoon fog.

While the maximum most probable spill could occur as a result of any of the previously discussed accidents, a mishap during transfer operations was selected for this scenario. The relative ease in securing the spill source during transfer operations (versus tank ruptures and vessel groundings or collisions) make it the logical choice. Vessel scenarios were selected for both the worst case discharge and discharge of maximum impact.

VULNERABILITY ANALYSIS

Most of the numerous environmentally sensitive sites throughout Humboldt Bay are at risk. These sites include wildlife refuges, sheltered tidal flats, salt marshes, commercial oyster beds and farmed wetlands. For a complete description of the environmentally sensitive and economically significant areas at risk, see Annex E.

SCENARIO: MAXIMUM MOST PROBABLE DISCHARGE (NORTH COAST AREA)

Situation: An accident occurs during the transfer of diesel from a tank barge to the Chevron Facility in Eureka. Diesel

is discharged into Humboldt Bay for several minutes until the transfer line is secured. (**The facility was chosen at random** and the fact that it is used in this scenario should not be interpreted to mean that historical spill data indicates a potentially higher risk at this facility.) The two barge personnel begin deploying boom in an effort to contain the spill. Meanwhile, the Chevron employee calls the terminal manager to inform him of the spill. The terminal manager initiates notifications by calling the National Response Center (NRC), State of California Office of Emergency Services (OES), and Humboldt Bay Response Corporation (formerly Pacific Affiliates). Although not required by law, the terminal manager would likely call Coast Guard Group Humboldt Bay as well.

Location: Humboldt Bay, Chevron Facility

Amount: 2,500 barrels of diesel enter the water. (Note: Due to the ability to secure the source at a transfer facility, it is recognized that a spill at a facility could arguably be less than the 2,500 barrel volume. However, this value was chosen as the maximum most probable quantity for planning purposes.)

Securing Source: Transfer piping is secured by the Chevron employee overseeing the transfer operation.

Areas at Risk: All of Humboldt Bay is at risk. Due to weather and tidal conditions, the areas in the immediate vicinity and north of the Chevron facility are particularly at risk. These areas include
Palco Marsh, Indian, Woodley and Daby Islands, Eureka Slough,
Elk River, and the entire North Bay (Arcata Bay).

Time of Year: Early-May

Weather: Nighttime with fog.
Wind: 30 knots, SW to W
Visibility: 1/2 mi.
Seas: 1-2 ft.
Current: Max Flood

INITIAL ACTIONS

NOTIFICATION

As mentioned above, key notifications are made by the terminal manager to NRC, State OES, CG Group Humboldt Bay, and Humboldt Bay Response Organization. NRC notifies Coast Guard Marine Safety Office (MSO) San Francisco Bay via "flash fax". Coast Guard Group also notifies the MSO, recalls the MSO liaison assigned to the Group, and notifies the local State Office of Oil Spill Prevention and Response (OSPR) warden. State OES notifies

OSPR headquarters in Sacramento and Humboldt County Sheriff's Dispatch Center (the county's designated local emergency contact). MSO San Francisco notifies the Eleventh Coast Guard District Office and alerts the Pacific Strike Team. Numerous other notifications are carried out, as shown in Annex J, Appendix II, Tab A.

ACTIVATION OF RESPONSE

The facility implements their facility response plan and initiates appropriate response actions. The major questions to be answered, after ensuring the safety of life, are:

Has the source been secured? and
How much time remains to effectively boom the area?

The facility has 1100 feet of boom which is immediately deployed to contain as much oil as possible. Marine Safety

Office San Francisco Bay's liaison (attached to Group Humboldt Bay) is dispatched to assess the situation, arriving on scene within 30 minutes. The local OSPR warden and a Humboldt Bay Response Corporation representative also arrive on scene within 30 minutes to assess the situation. Upon arriving on scene, these individuals meet with the Chevron's Incident Commander to develop immediate strategies and priorities (taking into consideration wind and sea state) to minimize the spread of oil. The local OSPR Biologist is called to assist with this prioritization.

The MSO arranges to fly 2-3 command representatives to the scene via CG helicopter. The MSO Command Duty Officer (CDO) and watchstander issue a Broadcast Notice to Mariners, establish a safety zone to prevent vessel traffic from transiting the area, and open the Oil Spill Liability Trust Fund (OSLTF) requesting an initial ceiling of $25,000. Inbound traffic is monitored by Coast Guard Station Humboldt Bay.

Pre-loaded equipment from Humboldt Bay Response Corporation is transported to the site via tractor trailers and/or small boats launched from the City of Eureka boat launch (east side of Route 255 bridge) or the Fields Landing launch ramp. The personnel and equipment arrive on scene within 1.5 hours.

With a spill of this magnitude, a significant quantity of oil will likely spread from the source. As such, additional personnel and equipment are requested from nearby facilities, Coast Guard Group Humboldt Bay, California Conservation Corps, Coast Guard Pacific Strike Team, Marine Spill Response Corporation and local fishermen's organizations. Nearby facilities could have their personnel and equipment on scene within 1.5 hours of notification. CG personnel and equipment could arrive within 2 hours of notification. Trained response personnel from California Conservation Corps could arrive within 2 hours of notification. Personnel and equipment from the Pacific Strike Team and MSRC are dispatched via truck to arrive in approximately 5-8 hours. Local fishing vessels capable of deploying MSRC or CG VOSS systems are outfitted with a VOSS and ready to be deployed within 5 hours.

INITIAL RESPONSE ACTIONS

On-water recovery of product at the leading edge of the slick will be performed by MSRC skimming vessels and fishing vessels equipped with a VOSS. However, time delays in the deployment of will be experienced. MSRC has no personnel in Humboldt Bay and Humboldt Bay Response Organization personnel have not yet been trained in the use of MSRC equipment. Also, as mentioned above, VOSS systems generally take 5-7 hours to install and will not be available for initial response. As such, booming strategies allowing for shoreside collection and skimming of product (vacuum trucks) must be implemented.

The three Palco Marsh culverts north of the Chevron facility should be closed immediately to prevent oiling of sensitive marshlands. These culverts currently have no floodgates; therefore, they must be manually blocked using sandbags, sediment or rocks. Exclusionary booming should also be performed at each of these culverts and at Elk River (see Annex E, sites A-1-037 and A-1-038).

Preventing oil from entering the northern portion of Humboldt Bay (Arcata Bay) should be given a very high priority. Not only is the area extremely sensitive, but it is comprised mainly of shallow water and mud flats, which significantly reduce the ability to respond. Deflection booming could be implemented at locations south of Woodley Island, south of Indian Island, and along the Eureka waterfront to deflect product toward various collection sites south of Arcata Bay. Due to natural pooling in the area, the southwestern tip of Woodley Island should receive consideration as a site to collect and skim recovered product. Additional collection and skimming sites in this area might include the Louisiana Pacific and Simpson docks along the Samoa Peninsula. Recommended strategies for this area of Humboldt Bay are found in Annex E, site A-1-036.

As much skimming and protective booming as possible is completed during the night with available boom. At first light, a CG Group Humboldt Bay helicopter conducts an overflight with CG, State of California and Responsible Party representatives aboard. Planning for any adjustments to the initial response strategies occurs immediately.

RESPONSE ORGANIZATION

The response organization is a modified Unified Command System (UCS) involving primarily the Operations and Planning sections. A public information team is also part of the response organization. Until additional personnel arrive from Alameda and Sacramento, respectively, the MSO liaison will assume the role of Federal On-Scene Coordinator (FOSC) and the local OSPR warden will assume the role of State On-Scene Coordinator (SOSC). The Responsible Party's Incident Commander will likely be the terminal manager until a member of the company's regional headquarters or corporate spill management team arrives.

The Operations section will be staffed primarily by Humboldt Bay Response Corporation personnel with Coast Guard and State of California monitors. A command post could be located either at the facility at one of the command center sites detailed in Annex F. The forward staging area is located at the Humboldt Bay Response Corporation/MSRC dock.

CONTAINMENT, COUNTERMEASURES, AND CLEANUP STRATEGIES

Prior to implementing any cleanup operations, the FOSC ensures that personnel involved in these operations have the appropriate level of training and are using appropriate personal protective equipment.

Containment is accomplished by implementing the booming strategies discussed above. The goals of containment are to hold and recover the spilled product to minimize shoreline impact. Since this spill is within the bay, it is decided not to use dispersants or in-situ burning. The open-water recovery is accomplished by skimmers and sorbents. The Pacific Strike Team may

deploy the Coast Guard On-water Containment and Recovery System (OWCRS) for skimming operations within Humboldt Bay, if appropriate towing vessels are available and if water depths permit. One difficulty encountered in open water recovery is the shallowness of certain areas in the bay, which are often left exposed at low tide. Considering that more severe damage may result, the Unified Command should decide to what extent any impacted marshlands will be cleaned. If shoreline cleanup is necessary, it will involve the usual raking and shoveling of debris and product.

RESOURCES REQUIRED AND ESTIMATED SHORTFALLS

The facility's boom and boat is likely to be overwhelmed by a spill of this size. Humboldt Bay Response Organization can supply approximately 10,000 feet of boom, in addition to the facility boom. Depending on the success of initial containment efforts, additional boom and skimmers, in excess of that available from Humboldt Bay Response Corporation, may be required. MSRC and the CG have pre-staged additional boom and skimming equipment at the Humboldt Bay Response Corporation warehouse. The local MSO trailer can provide an additional 2,700 feet of boom and the CGC EDISTO (homeported in Crescent City) has 1,800 feet.

Four to eight skimmers, storage bladders, and roughly five tank trucks would be required.

Additional personnel will most likely be required for a spill of this magnitude. California Conservation Corps should be contacted to augment the personnel that Humboldt Bay Response Organization and local facilities provide. Personnel from MSRC, MSO San Francisco Bay and the Pacific Strike Team will also be required.

Response shortfalls are addressed at the end of this annex.

ESTIMATED TIME TO CLEANUP THE SPILL

The time to complete cleanup will depend on the effectiveness of the initial containment efforts. Open water recovery will take approximately 2 weeks, while shoreline cleanup can be expected to take 30-45 days.

Humboldt Bay, California
Area Plan
Oil Spill Trajectory Model Notes

MAXIMUM MOST PROBABLE DISCHARGE

Model Limitations and Caveats

For this Area Plan oil spill scenario, only user-specified winds were used.

For offshore areas, current patterns are based on average seasonal conditions. Current perturbations from wind events, shelf waves, and eddy events are not predictable and therefore not included in the model. Similarly, local small scale phenomena, such as eddies off spits or in rivers and local convergences or divergences are not modeled.

Tidal information is based on NOS Tide Tables and does not reflect short term episodic events such as heavy runoff from floods or storm surges.

The model does not account for oil that picks up sediment and sinks. This occurs in high sediment rivers and along high energy sand beaches.

For large spills of the type being modeled for these scenarios, secondary sources of oil, such as refloating of oil from the shoreline, can be a significant problem. In this model, shorelines were coded so that the oil would not "stick" but would refloat after each tidal cycle. This allows more oil to move with tidal action and provides a more widespread impact. This procedure is used to enhance the "worst-case" scenario. In actual fact, wherever the model indicates shoreline impacts, the oil would mostly remain beached. However, some of the oil would refloat on high tides and be available to impact other areas.

Additional Notes

The model was run for 48 hours (May 5 - May 7, 1993) using the following spill scenario:

> An accident occurs while diesel fuel is being transferred via pipelines at the Chevron Facility on Humboldt Bay. 2,500 barrels of Fuel Oil No. 2 are quickly spilled into the water.
>
> Winds are constant at a stiff 30 knots from the WSW throughout the spill. Due to the short duration of the scenario (48 hours), only user-specified winds were used. No statistical winds were used.

The predicted tidal currents at Humboldt Bay (NOS Tidal Station No. 801), for the dates of the modeled spill, were used. The ebb and flood currents, at their maximum velocity, range from about 1.6 knots to 2.9 knots during this period. The modeled spill begins before a flood tide.

The oil type used in this scenario is No. 2 Fuel Oil, of which furnace, auto diesel, and stove fuels are common types. A spill of this kind of oil will typically form a heavy sheen, with lots of oil streamers. Shoreline impacts can usually be characterized as "bathtub ring" type stains. No. 2 Fuel Oil is toxic, so some of the fish and other marine life in the affected areas will probably be killed. In this scenario, the sensitive mud flats of Arcata Bay will probably suffer some fish kills.

Due to the strong 30 knot winds, the oil will be largely evaporated and/or dispersed after about 40 hours.

As shown on the oil spill scenario maps, the areas most probably impacted during this modeled spill will be the western and northern shores of the city of Eureka. No oil is expected to leave Humboldt Bay and impact the outer beaches. Although not shown in the results of the model run, the eastern side of Arcata Bay would also probably receive some oiling. The oil, pushed by the prevailing winds, would probably have more of a beach "staining" effect here than a more severe effect. In addition, some of the oil will probably flood back into the Elk River entrance.

Oil Budget Table

Adios 1.0.1

Oil Name: FUEL OIL NO.2 (DIESEL), CHEVRON
API: 35.3 Pour Point: 0.0 F
Wind Speed: Constant at 30 kn Emul. Const.:No emulsification expected
Water Temperature: 70 F
Instantaneous release of 2500 bbl
*Insufficient distillation & emulsification data, answers may be inaccurate.

Time hours	Total Released barrels	Evaporated percent	Dispersed percent	Floating percent
0	2,500	0	0	100
3	2,500	24	1	75
6	2,500	35	4	61
9	2,500	42	8	50
12	2,500	46	12	42
15	2,500	50	16	34
18	2,500	52	20	28
21	2,500	54	23	23
24	2,500	55	25	20
27	2,500	56	27	17
30	2,500	57	29	14
33	2,500	57	30	13
36	2,500	57	31	12
39	2,500	58	32	10

Tidal currents at Humboldt
Station No. 801
Latitude: 40 48 N
Longitude:124 11 W

Maximum Flood Direction 016 ees
Maximum Ebb Direction 211 ees

Time offsets	Hour:Mi
Minimum Before Flood	-01:14
Flood	-01:02
Minimum Before Ebb	-00:54
Ebb	-00:50

Based on San Francisco Bay E
Corrected time and currents umboldt Bay
Adjusted for daylight saving e.

Date	Time	Max Vel (Knots)	cription
05/04/93 TU	16:56	.00	n Before Flood
	20:03	2.22	x Flood
	23:08	.00	n Before Ebb
05/05/93 WE	2:16	-2.60	x Ebb
	5:40	.00	n Before Flood
	8:53	2.64	x Flood
	12:13	.00	n Before Ebb
	14:47	-1.75	ax Ebb
	17:42	.00	Min Before Flood
	20:47	2.22	Max Flood
	23:48	.00	Min Before Ebb
05/06/93 TH	3:02	-2.85	Max Ebb
	6:28	.00	Min Before Flood
	9:42	2.82	Max Flood
	13:07	.00	Min Before Ebb
	15:37	-1.65	Max Ebb
	18:26	.00	Min Before Flood
	21:31	2.16	Max Flood
05/07/93 FR	0:29	.00	Min Before Ebb
	3:48	-2.90	Max Ebb
	7:15	.00	Min Before Flood
	10:31	2.82	Max Flood
	13:59	.00	Min Before Ebb
	16:22	-1.55	Max Ebb
	19:11	.00	Min Before Flood
	22:13	2.04	Max Flood
05/08/93 SA	1:12	.00	Min Before Ebb
	4:34	-2.90	Max Ebb
	8:03	.00	Min Before Flood
	11:17	2.70	Max Flood
	14:50	.00	Min Before Ebb
	17:09	-1.40	Max Ebb
	19:57	.00	Min Before Flood
	22:57	1.86	Max Flood
05/09/93 SU	1:55	.00	Min Before Ebb
	5:17	-2.70	Max Ebb
	8:52	.00	Min Before Flood
	12:08	2.46	Max Flood

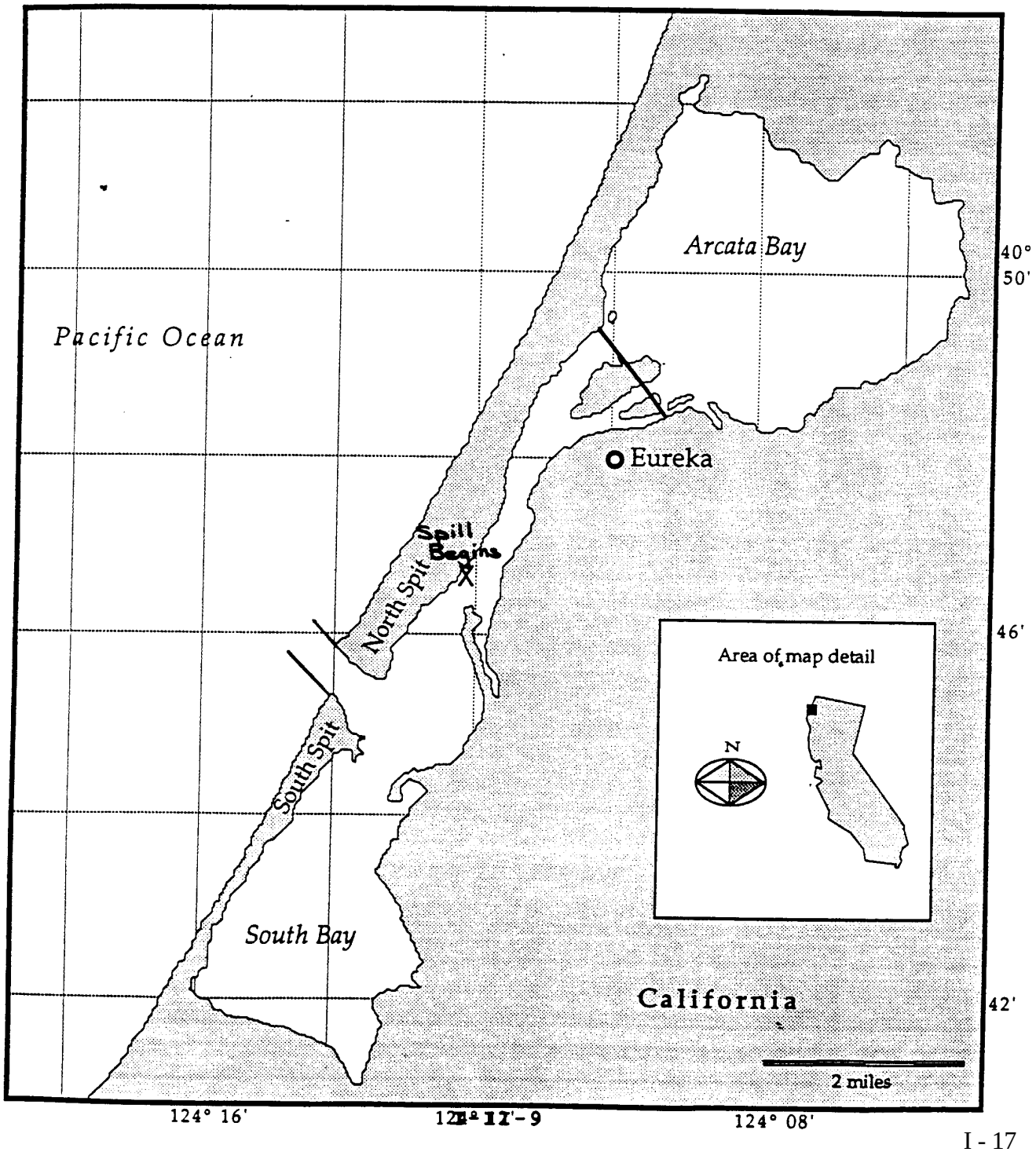
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 05 May 1993 / 0600

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



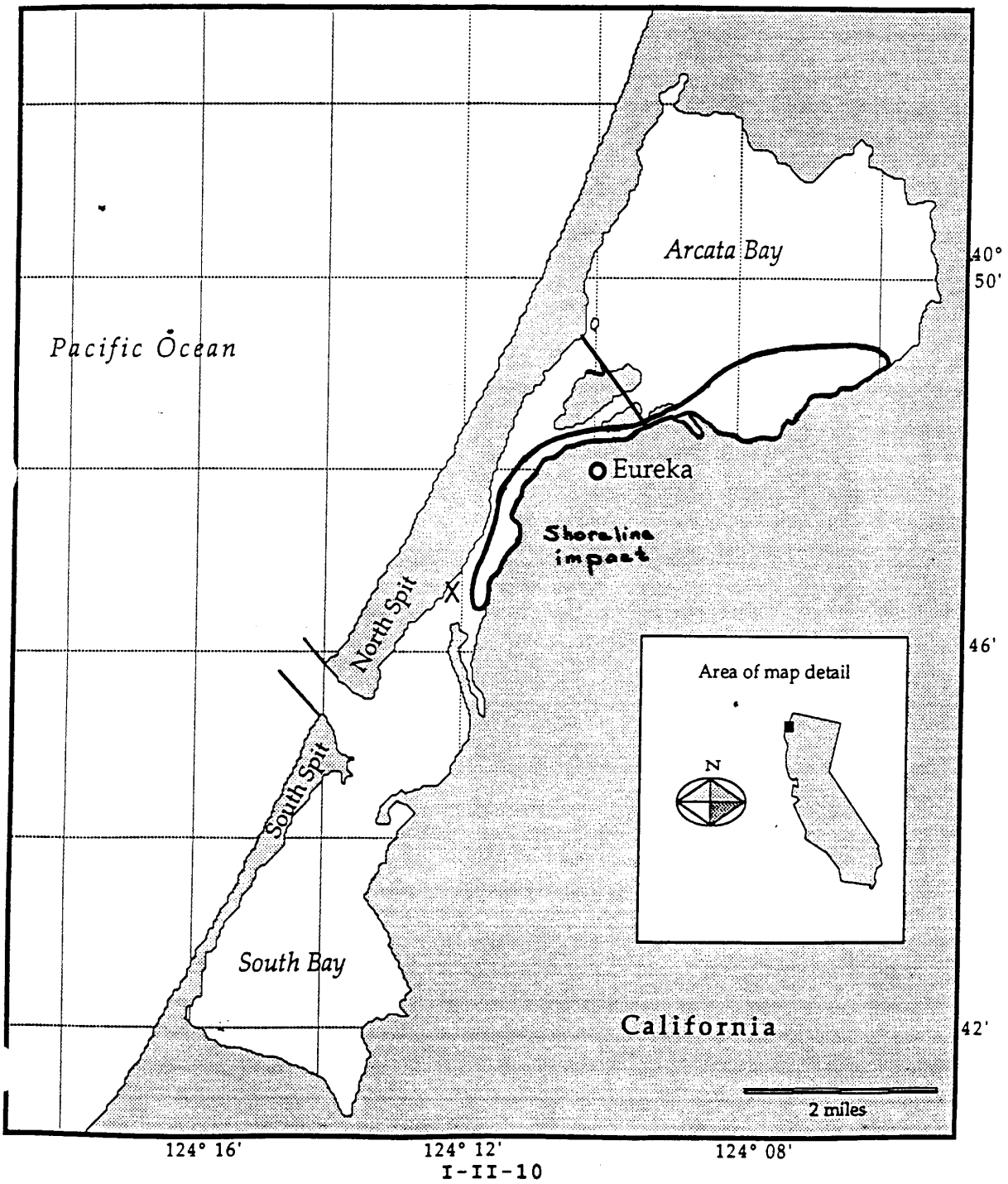
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 05 May 1993 / 1200

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



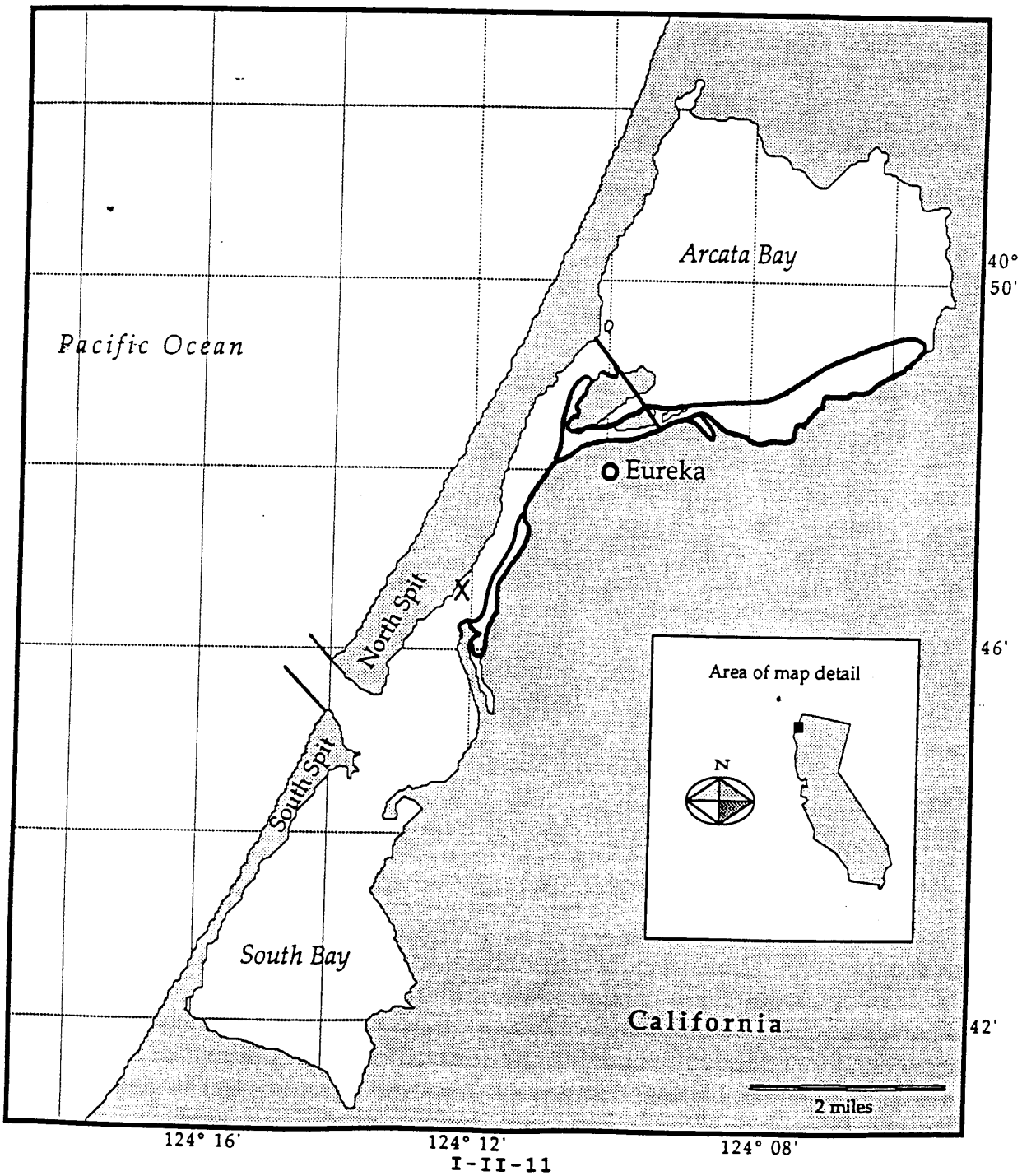
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

Date/Time: 05 May 1993 /1800

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)

USE ONLY AS A GENERAL REFERENCE



I-II-11

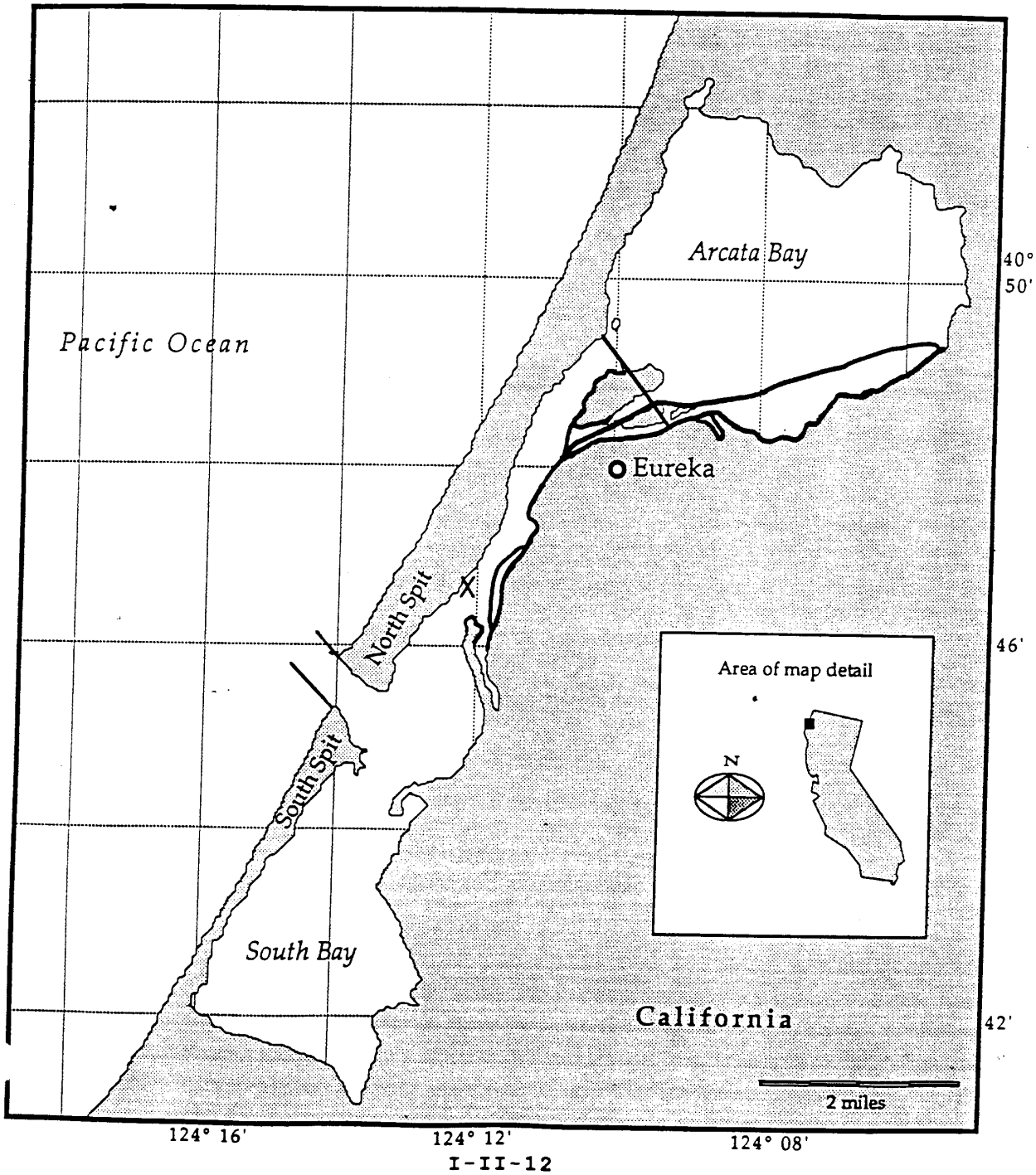
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 06 May 1998/0000

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



I-II-12

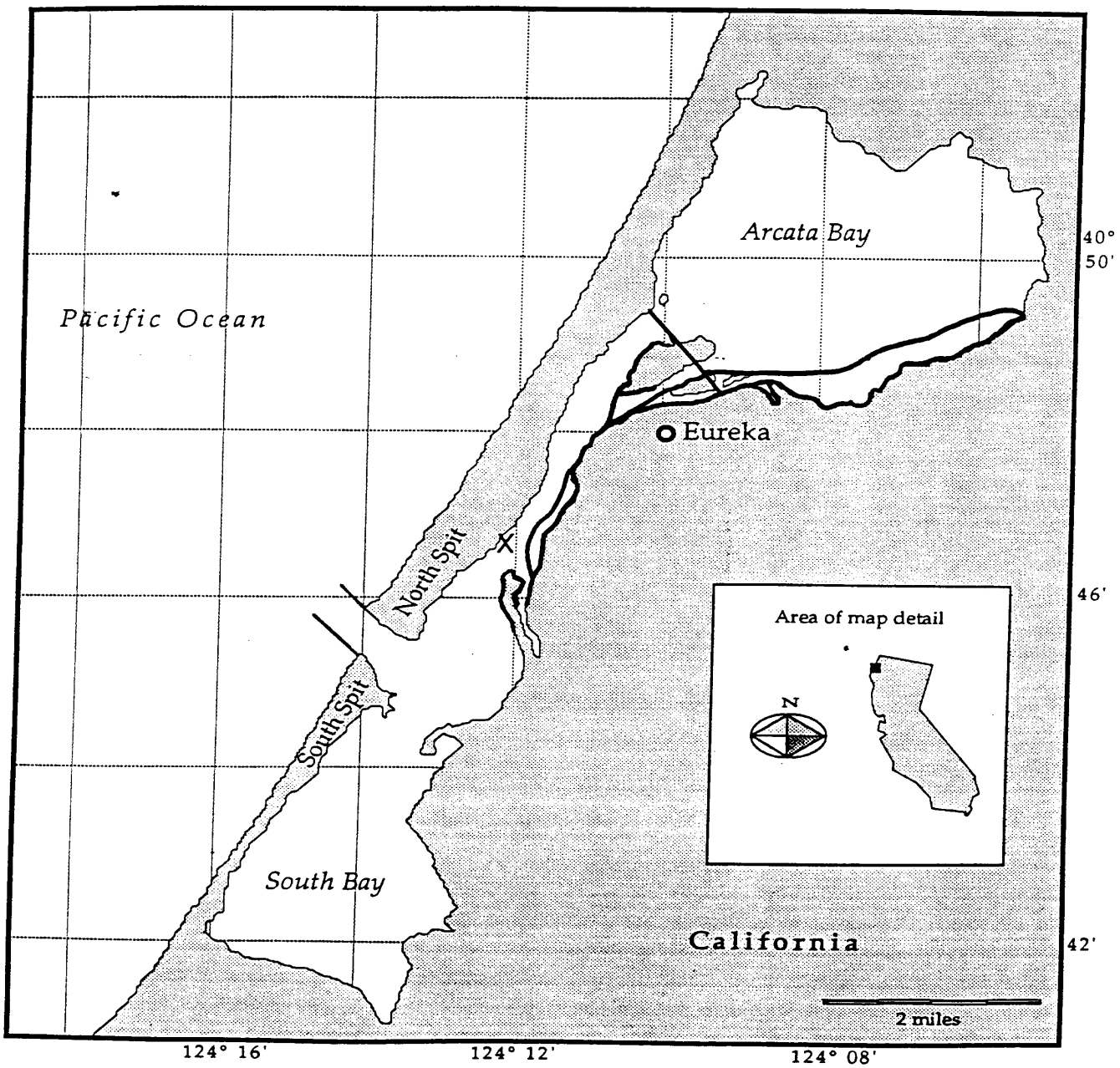
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 06 May 1993/0600

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



I-II-13

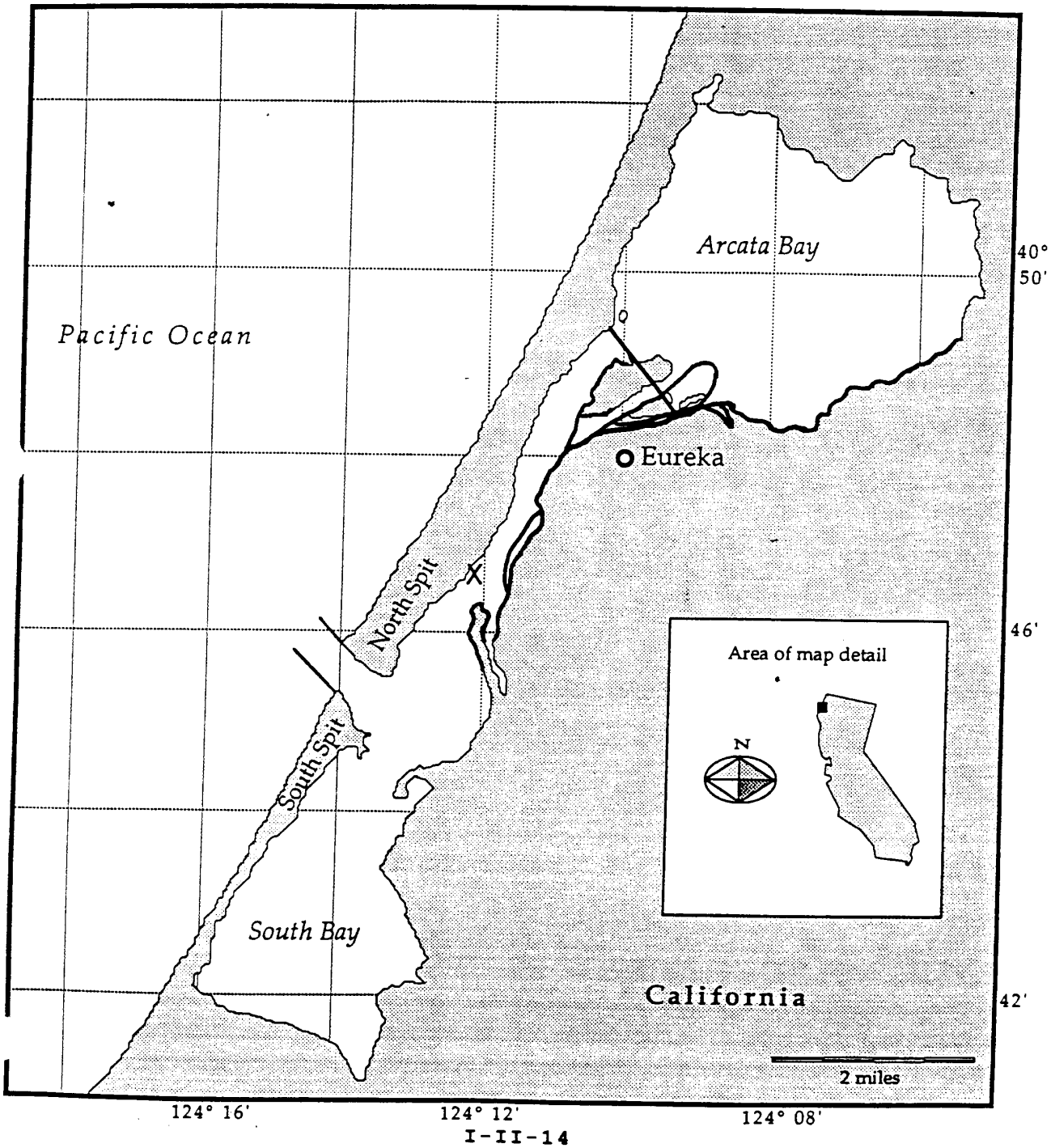
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 06 May 1993 / 1200

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



I-II-14

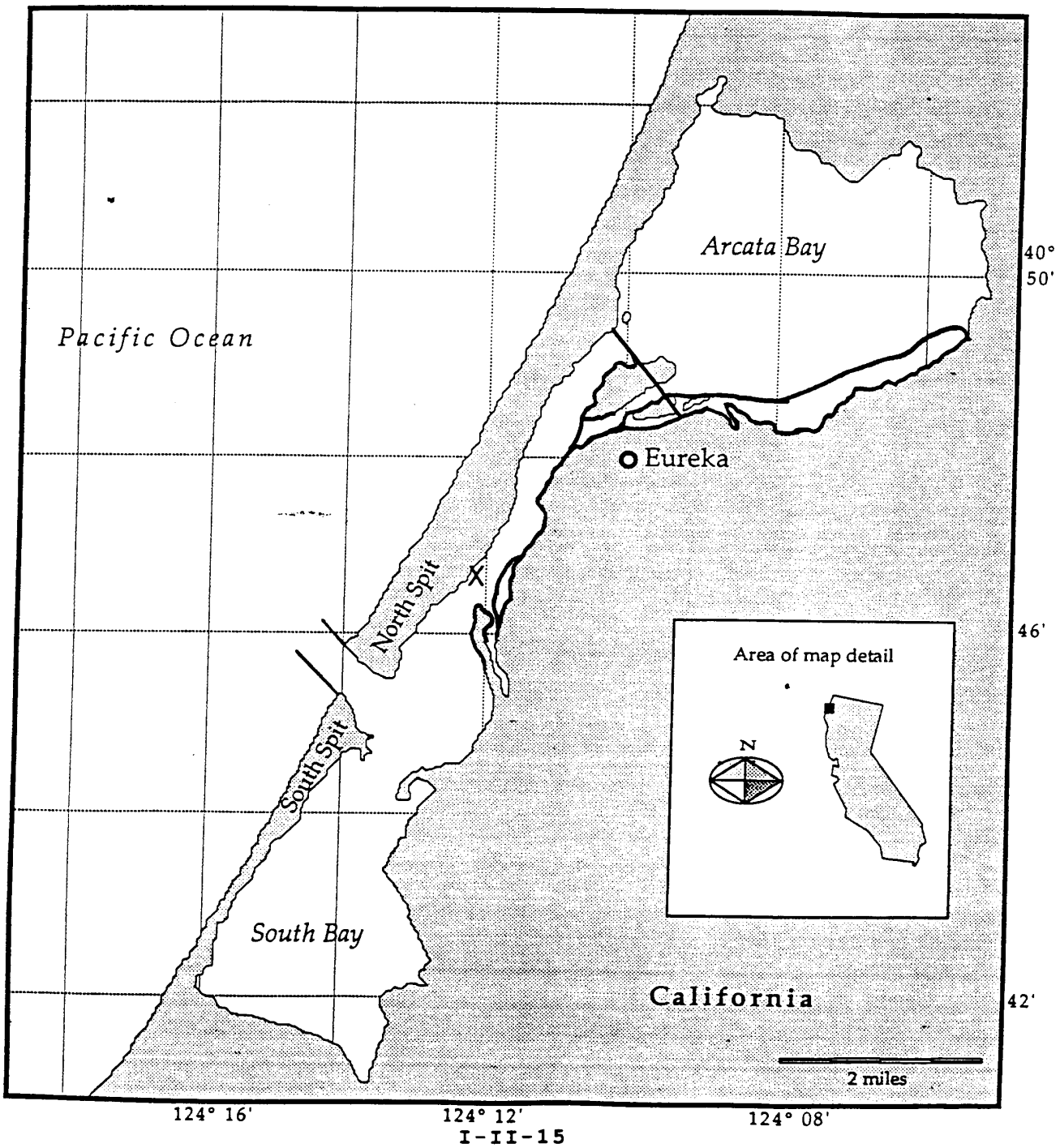
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 06 May 1993/1800

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



I-II-15

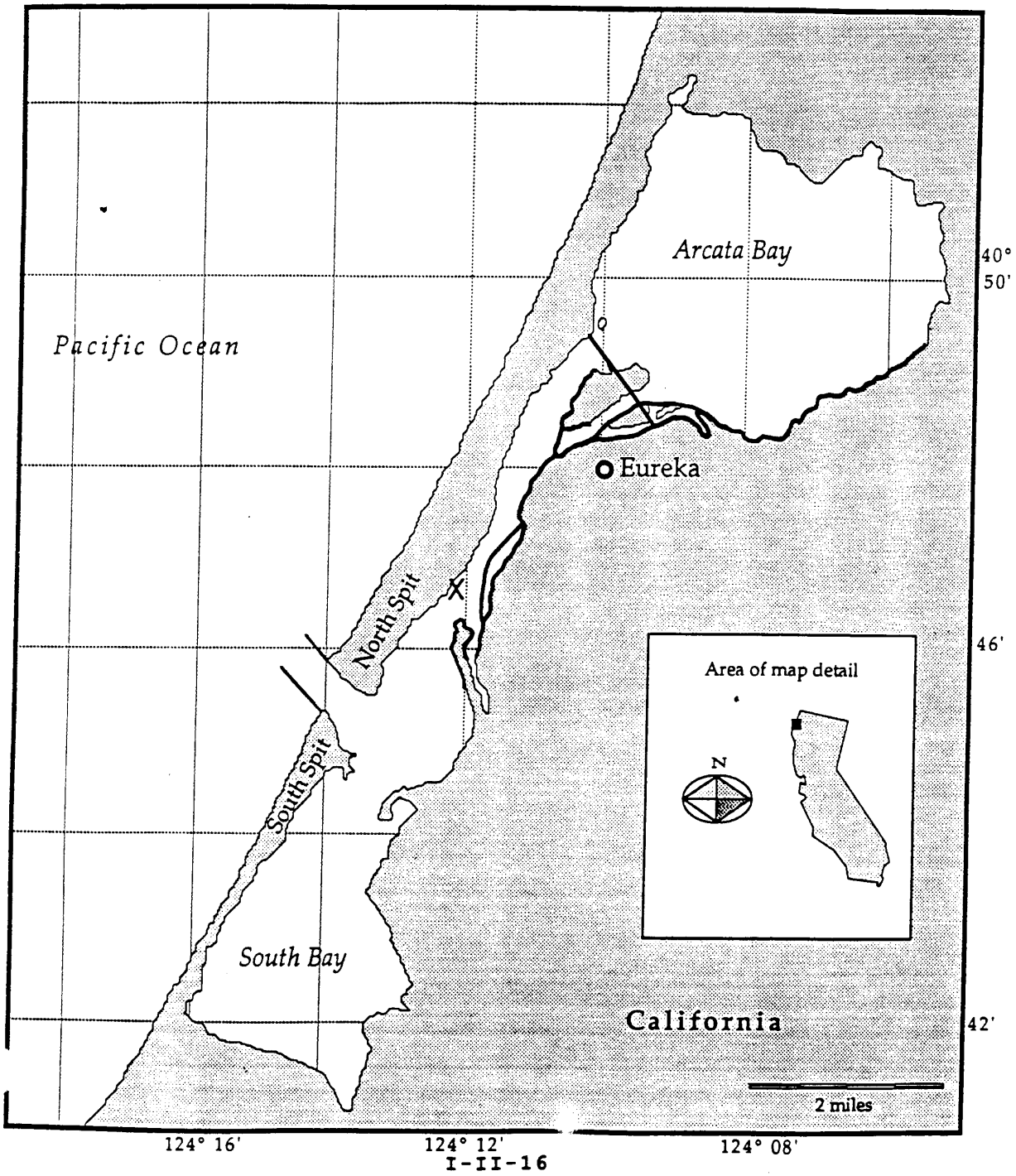
Humboldt Bay Area Plan

Oil Spill Scenario Map (Bay)
prepared by NOAA

USE ONLY AS A GENERAL REFERENCE

Date/Time: 07 May 1993 /0000

Product Spilled: 2,500 barrels, Fuel Oil No. 2 (Diesel)



I-II-16